

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of

SZUM *et al.*

Group Art Unit: tba

Continuation of Appln. No.: 09/035,771

Examiner: tba

Filed: March 6, 1998

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FOR: RADIATION-CURABLE OPTICAL GLASS FIBER COATING COMPOSITIONS,
COATED OPTICAL GLASS FIBERS, AND OPTICAL GLASS FIBER
ASSEMBLIES

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January 11, 2001

PRELIMINARY AMENDMENT

Hon. Commissioner of Patents
and Trademarks
Washington, D.C. 20231

Sir:

Prior to examination on the merits, please amend the above-identified application in the manner set forth below.

IN THE CLAIMS

Please amend the claims as follows:

Please cancel claims 1-72 without prejudice or disclaimer, and please add new claims 73-98.

73. (New) A coated optical fiber comprising:
an optical fiber; and
a cured primary coating on the optical fiber;
wherein the primary coating is strippable from a portion of the optical fiber at a temperature in at least a portion of the temperature range from about 25° to about 125°
C. by exerting a force to a portion of the primary coating about the portion of optical

fiber in a direction parallel to the longitudinal axis of the glass fiber which is away from a portion of the primary coating remaining on the optical fiber, such that the exertion of force, followed by an optional one wipe with an alcohol laden piece of cloth or paper of the stripped portion of optical fiber, results in the stripped portion of optical fiber having substantially no residue of the primary coating.

74. (New) The coated optical fiber of claim 1, wherein the primary coating is strippable at the temperature upon execution of the force to leave a stripped portion of the optical fiber having a Mill's test value of less than about 2.

75. (New) The coated optical fiber of claim 74, wherein the primary coating is strippable at the temperature upon exertion of the force to leave a leave a stripped portion of the optical fiber having a Mill's test value of about 1.5.

76. (New) The coated optical fiber of claim 73, wherein the coating prior to curing is liquid at 60° C.

77. (New) The coated optical fiber of claim 76, wherein the coating prior to curing is liquid at 25° C.

78. (New) The coated optical fiber of claim 73, wherein the primary coating is made of a material which is removable from a glass substrate by an adhesion test force of less than 45 g/in, as measured by a peel back test at 50% relative humidity, has an elongation to break of at least about 88% as measured by ASTM D-638, and has a tensile strength of at least about 72.5 psi as measured by ASTM D-638.

79. (New) The coated optical fiber of claim 78, wherein the adhesion test force is about 14 g/in.

80. (New) The coated optical fiber of claim 73, wherein the primary coating is made of a material which is removable from a glass substrate by an adhesion test force of at least 5 g/in, as measured by a peel back test at 95% relative humidity, has an elongation to break of at least about 88% as measured by ASTM D-638, and has a tensile strength of at least about

72.5 psi as measured by ASTM D-638.

81. (New) The coated optical fiber of claim 78, wherein the elongation to break is about 140%.

82. (New) The coated optical fiber of claim 78, wherein the tensile strength is at least about 145 psi.

83. (New) The coated optical fiber of claim 73, wherein said primary coating layer comprises a cured reaction product of from about 5 to about 80 percent by weight of one or more acrylate- or methacrylate-terminated urethane oligomers.

84. (New) The coated optical fiber of claim 83, wherein said primary coating layer (b) further comprises the reaction product of, in addition to the acrylate or methacrylate-terminated oligomer, from about 0.1 to about 20 percent by weight of a monomer selected from the group consisting of isobornyl acrylate, isodecyl acrylate, hexanediol diacrylate, phenoxyethyl acrylate, and lauryl acrylate.

85. (New) The coated optical fiber of claim 83 wherein said primary coating layer additionally comprises about 1 wt% of an organofunctional silane adhesion promoter.

86. (New) The coated optical fiber of claim 85, wherein said adhesion promoter is a mercapto-functional silane.

87. (New) The coated optical fiber of claim 85, wherein said adhesion promoter is 3-mercaptopropyltrimethoxysilane.

88. (New) The coated optical fiber of claim 83, wherein said primary coating layer additionally comprises a photoinitiator.

89. (New) The coated optical fiber of claim 83, wherein said primary coating layer additionally comprises from about 0.5 percent by weight of thioldiethylene bis(3,5-di-tert-

butyl-4-hydroxy) hydrocinnamate.

90. (New) The coated optical fiber of claim 73, wherein the primary coating comprises the radiation-cured reaction product of the following ingredients:

(A) from about 5 percent to about 80 percent by weight of a reactively terminated urethane oligomer which is the reaction product of (i) a polyether polyol; (ii) a wholly aliphatic polyisocyanate; and (iii) an endcapping monomer supplying a reactive terminus;

(B) from about 15 percent to about 65 percent by weight of ethoxylated nonyl phenol acrylate;

(C) from about 1.5 percent to about 3 percent by weight of a photoinitiator; and

(D) about 1 percent by weight of an organofunctional silane adhesion promoter which binds in with the primary coating composition during cure;

wherein all of the stated percentages are percentages by weight based on the total weight of the primary coating prior to cure, wherein the tensile modulus of the coating composition, when cured, is less than about 220 psi at 25° C., and wherein the refractive index of the cured coating composition is suitable for an optical fiber coating.

91. (New) The coated optical fiber of claim 73, wherein the primary coating comprises the radiation-cured reaction product of the following ingredients:

(1) from about 5 to about 80 percent by weight an acrylate-terminated aliphatic polyether urethane oligomer;

(2) from about 15 percent to about 65 percent by weight of ethoxylated nonyl phenol acrylate;

(3) from about 1.5 percent to about 3 percent by weight of a photoinitiator; and

(4) about 1 percent by weight of an organofunctional silane adhesion promoter which binds in with the primary coating composition during cure;

wherein all of the stated percentages are percentages by weight based on the total weight of the primary coating prior to cure.

92. (New) The coated optical fiber of claim 91, wherein the oligomer and the one or more monomer diluents are selected such that a mixture of the oligomer and the one or more

monomer diluents is liquid at 25° C.

93. (New) An optical ribbon comprising a plurality of optical fibers of claim 73 and a matrix material, the plurality of fibers held together in a parallel arrangement by the matrix material.

94. (New) A method of preparing a coated optical fiber for splicing, the coated optical fiber comprising a primary coating coated onto an optical fiber, comprising the steps of:

stripping the primary coating away from a portion of the optical fiber at a temperature in at least a portion of the temperature range from about 25° to about 125° C. by cutting with a blade into the primary coating, then having the blade exert a force on the primary coating in a direction parallel to the optical fiber to force the primary coating away from the portion of the optical fiber, and optionally wiping the portion of optical fiber from which primary coating has been forced away with an alcohol laden piece of cloth or paper, such that the stripped portion exhibits little or no residue of the primary coating.

95. (New) A method of splicing coated optical fibers comprising, preparing two optical fibers for splicing according to the method of claim 95;

aligning the stripped portions of the prepared optical fibers; and
joining the stripped portions of the prepared optical fibers.

96. (New) A spliced optic fiber made by the method of claim 95.

97. (New) A coated optical fiber comprising:

an optical fiber;

a primary coating coated onto the optical fiber, the primary coating made of a material which is removable from a glass substrate by an adhesion test force of less than 45 g/in, as measured by peel back test at 50% relative humidity, an elongation of at least about 88% as measured by ASTM D-638, and a tensile strength of at least about 72.5 psi as measured by ASTM D-638.

98. (New) A process for preparing a coated optical fiber comprising

(1) applying to an optical fiber a primary coating composition layer comprising a

mixture of the following ingredients:

(A) from about 5 percent to about 80 percent by weight of a reactively terminated urethane oligomer which is the reaction product of (i) a polyether polyol; (ii) a wholly aliphatic polyisocyanate; and (iii) an endcapping monomer supplying a reactive terminus;

(B) from about 15 percent to about 65 percent by weight of ethoxylated nonyl phenol acrylate;

(C) from about 1.5 percent to about 3 percent by weight of a photoinitiator; and

(D) about 1 percent by weight of an organofunctional silane adhesion promoter which binds in with the primary coating composition during cure;

wherein all of the stated percentages are percentages by weight based on the total weight of the primary coating prior to cure, wherein the tensile modulus of the coating composition, when cured, is less than about 220 psi at 25° C., and wherein the refractive index of the cured coating composition is suitable for an optical fiber coating; and

(2) radiation-curing said coating in situ,

wherein the primary coating is strippable from a portion of the optical fiber at a temperature in at least a portion of the temperature range from about 25° to about 125° C. by exerting a force to a portion of the primary coating about the portion of optical fiber in a direction parallel to the longitudinal axis of the glass fiber which is away from a portion of the primary coating remaining on the optical fiber, such that the exertion of force followed by an optional one wipe, with an alcohol laded piece of cloth or paper of the stripped portion of optical fiber, results in the stripped portion of optical fiber having a substantially no residue of the primary coating.

REMARKS

Claims 1-72 have been cancelled and claims 73-98 have been added. Upon entry of this Amendment, claims 73-98 will be pending, of which claims 73, 94, 97, and 98 are independent. Claims 73-98 are copied from and/or patterned after claims of U.S. Patent No. 6,014,488, a copy of which is attached hereto. Support for new claims 73-98 can be found throughout the application as filed. Accordingly, it is respectfully submitted that no new matter has been introduced.

If any questions remain regarding the above, the Examiner is encouraged to call the undersigned attorney.

Respectfully submitted,

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